

ABSTRACT OF THE DISCLOSURE

A second conductive layer is formed above a first conductive layer and arranged substantially perpendicular to the first conductive layer. A plurality of
5 magneto-resistance effect elements are formed between the first and second conductive layers and arranged in the lengthwise direction of the first conductive layer and contain free layers whose spin directions are controlled to be reversed by a resultant magnetic
10 field caused by the first and second conductive layers. A magnetic layer is inserted between the first conductive layer and the magneto-resistance effect elements and causes magnetic interaction with respect to the free layers of the magneto-resistance effect
15 elements.